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TITLE: A RECORDING SCHEDULE RESERVATION SYSTEM
FOR RESERVING A RECORDING SCHEDULE OF A
BROADCAST PROGRAM THROUGH A NETWORK

INVENTORS: Tomoyuki HANAI, Nanami MIKI

William S. Frommer
Registration No. 25,506
FROMMER LAWRENCE & HAUG LLP
745 Fifth Avenue
New York, New York 10151
Tel. (212) 588-0800

**A RECORDING SCHEDULE RESERVATION SYSTEM
FOR RESERVING A RECORDING SCHEDULE OF A BROADCAST PROGRAM
THROUGH A NETWORK**

5 BACKGROUND OF THE INVENTION

1. Field of the Invention:

The present invention relates to a recording
schedule reservation system for reserving a recording
schedule through a network. More particularly, the
10 present invention relates to such a recording schedule
reservation system capable of externally implementing
recording schedule reservation via a network.

2. Description of the Related Art:

When recording any desired broadcasting program by
15 applying a video recording/reproducing apparatus based on
a conventional art such as a video recorder, for example,
it has been a conventional practice to effect reservation
of a recording schedule by way of operating a remote
controller. Based on this recording schedule, the video
20 recorder with a preset recording schedule records a
received broadcasting program on a recording medium when
a scheduled time is reached.

Further, it is also possible to browse broadcasting
program information by way of accessing an electronic
25 program guide (EPG) server when setting a recording
schedule to select a desired broadcasting program among
browsed program information.

Nevertheless, the above method still has a
technical problem to solve. More particularly, when
30 utilizing such a device for providing information on a
network, for example, after accessing an EPG server, it

is still impossible to reserve a recording schedule of any desired broadcasting program on such a video recording/reproducing apparatus intended for the recording schedule reservation from a different external device. Further, it is neither possible to effect the recording schedule reservation of any desired broadcasting program from a portable information communication terminal apparatus such as a portable telephone, for example, nor possible to confirm actual recording schedule of a video recording/reproducing apparatus from a remote location. Further, the above method still fails to accumulate program information corresponding to the reserved recording schedule.

Accordingly, such a conventional art as the one cited above not only obliges a video recording/reproducing apparatus to secure reservation of a recording schedule via operation of an external information communication apparatus, but it also necessitates accumulation of information of the recording condition and information of recorded programs as technical problems remaining to be solved.

SUMMARY OF THE INVENTION

In order to fully solve the above problems, the recording schedule reservation system related to the present invention is consummated with the construction described below.

(1) The inventive recording schedule reservation system for programming a recording schedule of a broadcast program through a network comprises;

a program information server connected to a network,
having broadcast program information and client
information accumulated therein;

a video recording/reproducing apparatus connected to
5 the network for accessing the program information server
to reserve a recording schedule of a broadcast program;
and

an information terminal apparatus for accessing the
program information server to read the broadcast program
10 information so as to select a desired broadcasting
program, wherein:

the program information server delivers recording
schedule reservation of the selected broadcast program in
the video recording/reproducing apparatus.

15

(2) In the recording schedule reservation system
defined in the article (1), the above-referred
information terminal apparatus is a portable-type
information terminal apparatus.

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(3) In the recording schedule reservation system
defined in the article (2), the above-referred portable-
type information terminal apparatus is a portable-type
telephone.

25

(4) In the recording schedule reservation system
defined in the article (1), the above-referred
broadcasting program information includes: a channel
number and/or starting time of a broadcasting program
and/or ending time of the broadcasting program and/or
actual duration of the broadcasting program and/or video
30 recording mode and/or a title of the broadcasting program.

(5) In the recording schedule reservation system

defined in the article (1), the above-referred
information terminal apparatus capable of accessing the
above-referred program information server enables the
program information server to execute authentication of
5 individuals.

(6) In the recording schedule reservation system
defined in the article (1), the above-referred program
information server to be accessed by the above-referred
information terminal apparatus executes individual
10 authentication and charges individuals for payment of
service fee.

(7) In the recording schedule reservation system
defined in the article (1), the above-referred video
recording/reproducing apparatus programs a recording
15 schedule based on the recording schedule reservation
delivered by the above-referred program information
server.

(8) In the recording schedule reservation system
defined in the article (1), the above-referred program
20 information server comprises an information/control
server to be accessed by the information terminal and a
broadcasting program server to be accessed by the video
recording/reproducing apparatus, wherein the
information/control server and the broadcasting program
25 server discretely operate themselves on the network.

(9) In the recording schedule reservation system
defined in the article (8), the above-referred
broadcasting program server is an electronic program
guide (EPG) server.

30 (10) In the recording schedule reservation system
defined in the article (8), the above-referred

information/control server accumulates broadcasting
program information scheduled by the above-referred
information terminal apparatus, and the information
terminal apparatus is capable of checking the recording
5 schedule from broadcasting program information
accumulated in the information/control server.

(11) In the recording schedule reservation system
defined in the article (10), if a recording schedule for
a broadcasting program is erroneously input, then, the
10 above-referred information/control server responds to the
above information terminal apparatus by way of informing
the information terminal apparatus of the erroneously
established recording schedule of the broadcasting
program.

(12) In the recording schedule reservation system
defined in the article (10), the above-referred
information terminal apparatus is capable of checking a
recorded broadcasting program from the broadcasting
program information accumulated in the above-referred
20 information/control server.

(13) In the recording schedule reservation system
defined in the article (8), when the information terminal
apparatus selects the broadcasting program by accessing
the information/control server, the information/control
25 server accesses the broadcasting program server to set
the recording schedule of the selected broadcasting
program; when the recording schedule of the selected
broadcasting program is set, the broadcasting program
server transmits the broadcasting program information set
30 by the information/control server to the video
recording/reproducing apparatus; and when the video

recording/reproducing apparatus receives the broadcasting program, the video recording/reproducing apparatus reserves the recording schedule of the selected broadcasting program.

- 5 (14) In the recording schedule reservation system defined in the article (1), whenever an improvement and/or any change is effected for broadcasting program information service in the above-referred program information server, an exactly identical improvement
10 and/or change is applied to the above-referred information communicating terminal apparatus and the above-referred video recording/reproducing apparatus via the network.

As was described above, by way of operating a
15 portable-type telephone which functions as an information terminal apparatus, for example, a user accesses a program information server on the Internet to specify a broadcasting program that should be scheduled to be recorded, and then, the specified broadcasting program is
20 transmitted to a video recording/reproducing apparatus connected to a network via the program information server. Because of this arrangement, it is possible for the video recording/reproducing apparatus to reserve a schedule of video recording via external reserving operation, and yet,
25 it is also possible to schedule the recording of a desired broadcasting program by way of utilizing information service provided by a portable-type telephone.

As is clear from the above description, the recording schedule reservation system proposed by the
30 present invention enables a user to browse a broadcasting program table by utilizing a portable-type telephone

which is an example of an information terminal apparatus.
When the user schedules a recording of an optional
broadcasting program via a display screen of the
portable-type telephone, it enables a remotely located
5 video recording/reproducing apparatus to reserve a
recording schedule of the designated program, whereby
enabling the user to secure the recording schedule of the
desired broadcasting program from an external location,
thus improving operating performance for securing
10 recording schedule of the desired broadcasting program.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is an overall schematic block diagram of the
construction of the recording schedule reservation system
15 for reserving a recording schedule through a network,
related to the present invention;

FIG. 2 is an overall schematic block diagram
designating structural components of a portable-type
telephone functioning as an information terminal
20 apparatus used for implementing the present invention;

FIG. 3 is an explanatory view of display contents
of a portable-type telephone set functioning as a
portable information terminal apparatus; and

FIG. 4 is a schematic block diagram of structural
25 components of a video recording/reproducing apparatus
used for implementing the present invention.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring to the accompanying drawings, practical
30 forms for implementing the present invention are
described below.

As shown in FIG. 1, the recording schedule reservation system for reserving a recording schedule through a network proposed by the present invention comprises the following: a transmitting party 10

5 comprising a portable telephone 12 functioning itself as a information terminal apparatus located in zone A of a base station 11; a server party 40 which transmits and receives information of the transmitting party 10 via a network; and a client party 70 which is capable of
10 receiving broadcasting program information the recording schedule of which is set from the server party 40. The broadcasting program information comprises a channel number, starting time of individual broadcasting programs, ending time of individual broadcasting programs, actual
15 duration of individual broadcasting programs, video recording mode, and titles of programs. The information related to the broadcasting programs may be changed as required.

The transmitting party 10 comprises the following:
20 the portable telephone 12 which is capable of displaying broadcasting program information located in the zone A of the base station 11 such as electronic program guide (EPG) information, for example, and the base station 11 which receives or transmits broadcasting program
25 information via operation of the portable telephone 12.

As shown in FIG. 2, the portable telephone 12 functioning itself as an information terminal apparatus incorporates so-called remote-controlling function. The portable telephone 12 comprises the following: an RF
30 modem/amplifier 14 which modulates, demodulates, and amplifies audio signals received via an antenna 13; an

encoder/decoder 15 which encodes amplified audio signal and then transmits encoded signal to the RF modem/amplifier 14 or decodes audio signal from the RF modem/amplifier 14; an audio-signal amplifier 16 which
5 amplifies audio signal; a speaker unit 17 which generates audio signals; a microphone 18 which inputs voice; a voice synthesizer 19 which generates synthesized voice; a memory 20; an infrared ray applied remote-controlled transmitter/receiver 21; a display unit 22 for displaying
10 menu or the like; a processing unit 23 which executes a variety of arithmetic operations via bus lines; and ten-keys (numerical keys)/reservation key 24; wherein the above components are respectively linked with each other via bus lines and subject to the control of the
15 processing unit 23.

While operating the portable telephone 12 having a structure comprising the above-referred components, an audio signal on the way of receiving telephone voice is initially demodulated into corresponding audio signal by
20 the above-referred RF modem/amplifier 14 and the encoder/decoder 15, and then, the demodulated audio signal is amplified by the audio signal amplifier 16 before being output from the speaker unit 17 as the audio signal. On the other hand, the audio signal input via
25 the microphone 18 is converted into an RF signal by the encoder/decoder 15 and the RF modem/amplifier 14 before being output via the antenna 13. When making a phone call, initially, a corresponding telephone number is input via the numerical key/reservation key 24 to effect
30 transmission to the base station 11 of the portable telephone 12, and then connected to a public telephone

circuit 46 via the above-referred server party 40. An electronic program guide (EPG) is displayed on the display unit 22. User selects optional programs by operating cursor, and then transmits a scheduling command
5 by way of depressing the video recording scheduling key. It is also allowable to utilize asterisk * key to set a recording schedule, for example.

FIG. 3 exemplifies an information service menu display and a program table of the above portable
10 telephone 12. For example, the information service menu display comprises: "1: Menu, 2: Today's program table, 3: Mail, 4: Bookmark, 5: Internet". Assume that a user selects "2: Today's program table" by depressing the numerical key 2, then, Today's program table of channel-1
15 is displayed. For example, Today's program table serially displays the following: "8:00 News; 9:00 Drama; 10:00 Weather forecast; 11:00 Animation; 12:00 News at Noon". After selecting any desired item among the program table contents, a recording schedule is secured
20 by way of depressing the asterisk * key, for example.

Refer to FIG. 1 once again. The above-referred server party 40 comprises the following: a mobile communication control station 41 linked with the base station 11; a client's data base 42 incorporating a home
25 memory storing client's data accessible from the mobile communication control station 41; an information controlling server 43A and a terminal controlling server 43B accessible from the mobile communication control station 41; and a network EPG server 44 accessible from
30 the information controlling server 43A and the terminal controlling server 43B and via the Internet. The EPG

server 44 incorporates such a function capable of externally delivering program recording information via the public telephone circuit 46. The information controlling server 43A and the terminal controlling server 43B jointly constitute an information/control server 43. The EPG server 44 itself is the broadcasting program server. The information/control server 43 and the broadcasting program server (i.e., the EPG server 44) jointly constitute a program information server, where the information/control server 43 and the program information server (i.e., the EPG server 44) individually perform discrete operation. The EPG server 44 incorporates a client's information unit 45 in which individual telephone numbers of clients (users) are registered.

Further, it is so arranged that the information/control server 43 constituting the program information server executes individual authentication against individual access of an information terminal apparatus (i.e., the portable telephone set 12), and yet, the information/control server 43 charges individual clients for the payment of fee imposed on the individual authentication and rendered services. Act of individual authentication and charging of service fee may be utilized as part of information service proper to portable telephone. Whenever executing individual authentication and charging of service fee, it is allowable to exchange communication between mutual apparatuses after fully ciphering the contents of communication.

Further, the information/control server 43

incorporates such a function to store all the
broadcasting program information reserved by information
terminal apparatuses (i.e., portable telephones 12). It
is so arranged that an individual information terminal
5 apparatus (i.e., an individual portable telephone 12) can
confirm a recording schedule from the stored broadcasting
program information. Further, it is so arranged that, if
an error ever occurs in the course of reservation of a
recording schedule, in response, the above
10 information/control server 43 informs the corresponding
information terminal apparatus (i.e., the portable
telephone set 12) of the occurrence of the erroneous
recording schedule of a broadcasting program so that
fail-proof recording schedule can be secured.
15 Broadcasting program information accumulated in the
information/control server 43 is utilized to check and
confirm whether the scheduled program has actually been
recorded or not, later on. Further, by way of properly
controlling information related to the recording schedule,
20 it is possible to cancel the recording schedule, check
the actual status of the recording schedule, and
accumulate information of scheduled programs, and thus,
despite of remotely effected schedule of video recording,
it is possible to accurately grasp actual status of the
25 recording schedule.

It is so arranged that, if an improvement or any
change has been applied to the contents of broadcasting
program information service on the part of the program
information server comprising the information/control
30 server 43 and the EPG server 44, exactly identical
improvement or change is applied to the information

terminal apparatus (i.e., the portable telephone set 12) and the video recording/reproducing apparatus 71 via the corresponding network. Concretely, improvement or change of the contents of broadcasting program information

5 service is effected against the portable telephone 12 by causing the information/control server 43 to down-load specific data. The same applies to the video

recording/reproducing apparatus 71 by causing the EPG server 44 to download specific data via the public

10 telephone circuit 46. It is also allowable to exchange individual authentication between the video recording/reproducing apparatus 71 and the EPG server 44 before executing a fully ciphered information

communication. Setting of requirements to the video

15 recording/reproducing apparatus such as designation of addresses of the communicating addressees and authentication procedures is executed by utilizing

display screen. Setting of requirements to the portable telephone 12 and to the EPG server 44 is executed by

20 utilizing display screen of the portable telephone 12.

Refer to FIG. 1 once again. The receiving party 70 comprises such a conventional video recording/reproducing apparatus 71 and a television receiver 72 normally installed in a household. The video

25 recording/reproducing apparatus 71 is linked with a broadcasting-wave receiving antenna 73. The video recording/reproducing apparatus 71 also incorporates such a function to receive and browse broadcasting program information (EPG information) transmitted from the

30 program information server, i.e., the EPG server 44 as well as a function to be connected to the public

telephone circuit 46.

As shown in FIG. 4, the video recording/reproducing apparatus 71 comprises the following: a tuner receiver 74 for receiving a broadcast signal; an audio processor 75
5 for decoding an audio signal received by the tuner receiver 74; a video processor 76 for decoding a video signal received by the tuner receiver 74; a recording device 77 for recording received and decoded broadcasting program; a memory 78 for recording broadcasting program
10 information and recording schedule setting information; a remote-controlled light-receiver 79 for executing remotely controlled key operation; a recording schedule processor 80 for processing scheduled broadcasting program; an audio output unit 81 which outputs an audio
15 signal decoded by the audio processor 75; a video output unit 82 which outputs a video signal decoded by the video processor 76; a display unit 83 which causes characters and symbols to be displayed on the TV monitor screen by way of superposition; a modem 84 connected to the
20 external public telephone circuit 46; and a processing unit 85 which integrally controls the tuner receiver 74, the memory 78, the remote-controlled light receiver 79, the display unit 83, and the modem 84.

While operating the video recording/reproducing
25 apparatus 71 comprising the above-referred components, in the course of performing video recording, the tuner receiver 74 receives a broadcasting program of a specific broadcasting station selected by the processing unit 85 to cause an audio signal and a video signal to be
30 transmitted discretely to the audio processor 75 and the video processor 76, and then, the decoded audio signal

and video signal are respectively recorded by the recording device 77. When the reproduction mode is entered, the audio and video signals are respectively read out from the recording device 77, which are then encoded by the audio processor 75 and the video processor 76. The encoded audio and video signals are then output to the TV monitor set 72 from the audio output processor 81 and the video output processor 82. Broadcasting program information is delivered from the network-EPG server 44 to the video recording/reproducing apparatus 71 via the modem 84 by the public telephone circuit 46. After completing processing via the modem 84, broadcasting program information is processed by the processing unit 85 as the program information. Although the program information is provisionally stored in the memory 78, the program information is controlled by the recording schedule processor 80, and then, when a predetermined time is reached, the tuner receiver 74 receives signals output from a predetermined channel of a corresponding broadcasting station. The received signals are then treated with a process for recording into the recording device 77. The display unit 83 displays operating modes of the video recording/reproducing apparatus 71 by way of superposition. Further, in order to directly control the video recording/reproducing apparatus 71, based on the signal input from the remote-controlled light receiver 79, the processing unit 85 executes specific control operations.

30 In the recording schedule reservation system comprising the above-referred structural components and

function, as shown in FIG. 1, normally, the portable telephone 12 functioning itself as a information terminal apparatus communicates itself with the base station 11 within the corresponding zone A. As a result, the
5 corresponding zone A is automatically registered in the client's data base 42. The portable telephone 12 is connected to a network, i.e., the Internet in the embodiment, by the information/control server 43, and then accesses the program information server (i.e., the
10 EPG server 44). After being connected to the EPG server 44, it is possible to browse broadcasting program via the portable telephone 12.

Using the portable telephone 12, it is possible for user to select any broadcasting program desired for
15 recording from the broadcasting program table and designate the selected broadcasting program. In response, the EPG server 44 transmits the designated broadcasting program to the video recording/reproducing apparatus 71 installed in a household via the public telephone circuit
20 46. At the same time, the EPG server 44 receives client's information related to the user (who has made a phone call) from the terminal control server 43B operating the client's information base 42, and then reads connection information (i.e., telephone number) of
25 the corresponding video recording/reproducing apparatus 71 from its own client's information file 45 before connecting the public telephone circuit 46 thereto. By implementing the above processes, it is possible to
30 secure recording schedule of a desired broadcasting program by enabling the portable telephone 12 to remotely control the video recording/reproducing apparatus 71

installed in a household via the above arrangement.

In order to enable the portable telephone 12 to properly select and designate any desired broadcasting program, the user simply depresses a functional key such as a scheduling button provided for the portable telephone 12 to enable a specific scheduling code corresponding to the depressed key to be transmitted. Alternatively, the user may select a specific function from display contents of the portable telephone 12. If the user depresses a wrong functional key, he will be notified of an erroneous scheduling via response from the above servers. After receiving a proper scheduling code, the terminal control server 43 transmits the client's data and a predetermined broadcasting program code relevant to the designated broadcasting program to the EPG server 44. In response, the EPG server 44 reads relevant connection information (i.e., telephone number) to be linked with the client's video recording/reproducing apparatus 71 from the client's codes stored in the client's information unit 45 and then executes connection to the public telephone circuit 46. After confirming proper connection to the telephone circuit 46, the EPG server 44 transmits the recording scheduling information to the client's video recording/reproducing apparatus 71. The recording schedule information is transmitted in conformity with a specific format previously defined between the EPG server 44 and the corresponding video recording/reproducing apparatus 71. On receipt of the recording schedule information, the video recording/reproducing apparatus 71 set a recording schedule of the specified broadcasting

program, and then, when the scheduled time is reached,
the video recording/reproducing apparatus 71
automatically receives and records the scheduled
broadcasting program. As described above, by way of
5 scheduling a broadcasting program based on the scheduling
code, the user is prevented from incorrectly depressing a
scheduling key otherwise likely to be caused by direct
setting of a scheduling code while operating a
conventional remote controller provided for an individual
10 video recording/reproducing apparatus.

By virtue of the above arrangement, user is enabled
to browse a broadcasting program table by way of
utilizing a portable-type telephone which is actually a
portable-type information communication terminal
15 apparatus, and yet, he can secure a recording schedule
via its own display screen, thus leading to the improved
operating performance. Further, since it is possible to
provide broadcasting program information as part of
comprehensive services of a portable-type telephone, it
20 is possible to jointly implement control of clients and
charging of service fee. This in turn totally dispenses
with construction of such a complex system otherwise
needed for implementing control of clients and charging
of service fee, thus making it possible to build up an
25 efficient operating system.

Although the invention has been described in its
preferred form with a certain degree of particularity,
obviously many changes and variations are possible
therein. It is therefore to be understood that the
30 present invention may be practiced otherwise than as

specifically described herein without departing from the scope and the spirit thereof.